EXHIBIT 9

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ERICSSON INC.
NOKIA OF AMERICA CORPORATION
Petitioner,

v.

XR COMMUNICATIONS LLC
Patent Owner

IPR2024-00314
Patent 7,177,369

PATENT OWNER'S PRELIMINARY RESPONSE

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The Board should deny institution of *inter partes* review ("IPR") of U.S. Patent No. 7,177,369 ("'369 patent"). The Petition asserts that Wong or Minn or their combination renders obvious claim 1, the only independent claim challenged in this IPR. But the Petition fail to show that Wong or Minn discloses or renders obvious claim elements [1.1] and [1.2], which require determining a "forward path pre-equalization parameter" and modifying a signal based on said "forward path pre-equalization parameter." Because the Petition's fails to show the pre-equalization terms, it fails to show that claim 1 of the '369 patent is unpatentable. All challenged other claims depend from claim 1. Thus, institution should be denied.

I. THE '369 PATENT

A. Overview

The '369 patent, entitled "Multipath communication methods and apparatuses," is directed to solving specific problems arising from the multipath wireless channel environment. Because wireless communication allows users to freely move about through the coverage region, "there will not always be a clear or otherwise unobstructed communication path between a transmitting network resource and the receiving device," with anything from a building to a mountain being interposed between transmitter and receiver. '369 patent (Ex. 1001) at 1:34-56. In such a multipath environment, "reflections and diffraction from objects in the coverage area of the transmitting and receiving antennas" alter the reception of

transmitted signals. *Id.* at 3:10-14. In particular, reflection and diffraction allow the signal to propagate along paths of different lengths, and correspondingly different transmission delays. This is shown schematically in Figure 1.

The '369 patent provides "Novel Pre-Equalization Techniques" for addressing multipath propagation delays. The patent teaches "pre-equalization that substantially reduces unwanted effects associated with multipath fading, including retro-reflected propagation delays." *Id.* at 7:17-19. In particular, the pre-equalization of the '369 patent is applicable "to substantially correct the channel." *Id.* at 12:4-6. For example, the specification provides an exemplary pre-equalization block 30:

> Pre-equalization block 304 is configured to modify one or more of the OFDM modulated sub-carriers based on information from a reverse link processing block 308. Reverse link processing block 308 is basically configured to identify multipath propagation delays and/or problems for packets transmitted from CPE device 104 to base station device 102. One exemplary way to recognize multipath delays is to have CPE device 104 transmit a known sequence of data/tones. The received signal can then be compared or contrasted with the known sequence and differences detected, the differences being at least partially associated with the multipath communication environment. The differences, or information derived from such differences can then be used within pre-

> equalization block 304 to modify, in some manner, as applicable, the OFDM modulated sub-carriers. The modified ODFM modulated sub-carriers are then provided to antenna processing block 306, wherein they are further processed and eventually transmitted using one or more antennas 108.

Id. at 9:63–10:13.

The specification further describes regarding the exemplary pre-equalization block 30:

> Thus, pre-equalization block 304 may be configured, in this example, to invert the measured channel response so that the pre-equalization and the actual subsequently induced channel response errors substantially cancel out. As a result, transceiver 208 in the receiving CPE device will receive a signal that is essentially significantly free of troublesome multipath signals that are longer than the GI. Transceiver 208, therefore, will be able to reproduce and output the set of coded data, perhaps only with correctable errors. Such errors can be overcome/corrected is by further employing error control coding techniques, such as, e.g., CRC and other like techniques.

Id. at 10:31–10:42. [1]

[1] All emphasis added unless otherwise noted.

B. Challenged Claims

The challenged claims of the '369 patent are claims 1–7, 9–10, 12–14, 15, 19, 21, 28, 32-33, 35–37, and 41. Pet. at 1. Claim 1 is the only independent claim, and all other claims depend from claim 1. Independent claim 1 recites:

Identifier	Claim Language
[1.pre]	A method comprising:
[1.0]	identifying at least one multipath transmission delay within a reverse path data signal received from a receiving device;
[1.1]	determining at least one forward path pre-equalization parameter based on said at least one transmission delay; and
[1.2]	modifying a forward path data signal that is to be transmitted to the receiving device based on said at least one forward path pre-equalization parameter, where said modifying includes selectively setting different transmission power levels for at least two Orthogonal Frequency Division Multiplexing (OFDM) tones in said forward path data signal.

C. Prosecution History

The application leading to the '369 patent was filed April 25, 2002, claiming priority to U.S. Provisional Pat. App. No. 60/287,163 ("'163 Provisional") filed on April 27, 2001. On December 13, 2005, the Examiner rejected all pending claims over U.S. Patent No. 6,870,515 to Kitchener in light of U.S. Patent Application No. 2003/005829 by Cox and in light of several additional references. Ex. 1002 at 000176-204. In response, on June 13, 2006, the applicant amended pending claim 1

to recite that the reverse path data signal is received from a receiving device and the forward path data signal is transmitted to the receiving device (*id.* at 000135) but did not amend pending independent claim 43 (*id.* at 000146). The applicant argued that Kitchener and Cox failed to disclose the system of (non-amended) claim 42 comprising a first device and a second device, wherein the first device detects a multipath transmission delay in at least one reverse path data signal transmitted by the second device and pre-equalize a forward path data signal transmitted to the second device, and failed to disclose the system of amended claim 1 for the same reasons. Id. at 000165-68. In an office action dated July 11, 2006 and responding to the applicant's June 13, 2006 remarks, the Examiner allowed sixty-two claims, including claims 1 and 43, and rejecting the other pending claims only as to informalities. *Id.* at 000120. The applicant corrected the informalities as requested on July 31, 2006. *Id.* at 000089-114.

On August 28, 2006, the Examiner initiated a teleconference and indicated that certain dependent claims would be allowable if restated in independent form. *See id.* at 000062 (applicant's summary of teleconference). In response to the teleconference, the applicant submitted amendments and remarks stating that claims 1, 43, and 82 were being amended to include the allowable features of claims 42, 44, 81, and 83, apparently believing this would put the claims in condition for allowance pursuant to the teleconference. I*d.* at 000043-64. That response was mailed on

September 18 (*id.* at 000064) and stamped as received by the Patent Office on September 21 (*id.* at 000043). While it was in the mail, the Examiner issued a non-final rejection indicating that claims 42 and 81 would be allowable if rewritten in independent form. *Id.* at 000069-80. The applicant's response could not have been based on the subsequent non-final rejection. And the applicant expressly stated that the amendments were intended only to place the claims in condition that had already been indicated as allowable. The applicant in no way conceded or acknowledged that any previously pending claim was unpatentable over the asserted prior art. Indeed, nothing in the written record suggests that the applicant was even aware of the substantive basis of the Examiner's September 20 rejection.

The Examiner issued a notice of allowability several days later on October 2, 2006 (*id.* at 000030), and the patent issued on February 13, 2007 (*id.* at 000022).

D. Priority Date

The challenged claims of the '369 patent claim priority to '163 Provisional application filed on April 25, 2001. Ex. 1001 at 1. Petitioner asserts the prior art it relies on in this IPR predate April 2001 so "the Board does not need to consider whether the Challenged Claims are entitled to the [provisional's] date." Pet. at 8. Patent Owner agrees that the challenged claims are entitled to a priority date no earlier than April 2001. Patent Owner also agrees that the precise priority date is not material for this IPR. The Petition treats April 2001 as the operative priority date.

See Pet. at 10. Thus, Patent Owner will adopt that date for purposes of this IPR.

II. LEVEL OF ORDINARY SKILL IN THE ART

Petitioner proposes that for the '369 patent:

> a POSITA in April 2001 would have been familiar with wireless communications networks, equipment and integrated circuit chips, and would have had at least a working knowledge of the design of physical layer signal processing for Orthogonal Frequency Division Multiplexing (OFDM) wireless communications including the use of multiple antennas. A POSITA would have had at least a Bachelor's degree in Electrical Engineering or an equivalent field, and at least two years of work experience in developing OFDM based wireless communications. Alternatively, a POSITA would have had a more advanced degree, such as a Master's degree in Electrical Engineering or an equivalent field, combined with at least one year of work experience in developing OFDM-based wireless communications.

Pet. at 10.

For purposes of this preliminary response, Patent Owner does not challenge Petitioner's proposed definition. Patent Owner reserves the right to challenge the definition or propose an alternative definition if the Petition is instituted.

III. CLAIM CONSTRUCTION

The Petition proposes that each term be given its plain and ordinary meaning and does not propose any formal claim constructions. Pet. at 9. Patent Owner agrees that the terms of claim 1 of the '376 patent carry their plain and ordinary meaning. Patent Owner also agrees that formal claim constructions may be unnecessary. But Patent Owner *disagrees* that the asserted prior art "meets each claim limitation under any reasonable construction" as the Petition contends Pet. at 9. To the contrary, the asserted prior art fails to meet claim 1 under the plain meaning of the claim.

Claim 1 recites, in part, "determining at least one *forward path pre-equalization parameter* . . . and modifying a forward path data signal that is to be transmitted to the receiving device *based on said at least one forward path pre-equalization parameter* . . ." As discussed further in the argument section below, the Petition fails to show that the asserted prior art meets the plain meaning of "pre-equalization parameter" and "pre-equalization":

- the plain and ordinary meaning of "pre-equalization parameter" is parameter used to perform pre-equalization; and
- the plain and ordinary meaning of "pre-equalization" in the '369 patent is modifying a signal to reduce unwanted effects associated with multipath fading between the transmitter and the receiver. '369 patent at 7:15–20.

Patent Owner believes that these plain meaning interpretations are correct and helpful, but Patent Owner does not believe that formally adopting them is necessary to deny institution. Rather, the Petition fails to show a reasonable likelihood of unpatentability under any reasonable plain and ordinary meaning of the terms "pre-equalization parameter" and "pre-equalization."

IV. OVERVIEW OF PRIOR ART

A. Wong (Ex. 1005)

Wong is directed to "extending OFDM with adaptive modulation to multiuser frequency selective fading environments" using "an adaptive multiuser subcarrier allocation scheme where the subcarriers are assigned to the users based on instantaneous channel information." Ex. 1005 at 1747. Its goal is "to minimize the total transmit power." *Id.* at Abstract. In particular, Wong "focus[es] on how—and by how much—this new strategy can reduce the required transmit power; or how and by how much this new scheme can improve the bit-error rate (BER) for a fixed transmit power," or "how and by how much this new scheme can increase the area of coverage for a given transmit power and target BER." *Id.* at 1748. Wong contrasts its approach of minimizing total power against "the usual approach [that] is to maximize the capacity (or information rate) under the power constraint." *Id.*

Wong accomplishes this goal by allocating bits to each subcarrier using an algorithm that "assigns bits to the subcarriers one bit at a time, and in each

assignment, the subcarrier that requires the least additional power [for the additional bit] is selected," either using an exemplary "greedy algorithm" or using "faster and less complex algorithms which can speed up the bit allocation process significantly." *Id.* at 1750. To perform this algorithm, Wong requires channel estimation information as an input, which is expressly assumed to be provided by a black box whose output is "perfect channel estimation," although Wong acknowledges that "channel estimation in wireless fading channels is in general not very accurate," and states that further study of the sensitivity of the algorithm to channel estimation error "before the algorithm can be applied to practical systems." *Id.* at 1757.

In determining which subcarrier requires "the least additional power," Wong presents an equation for $\Delta P_{\hat{n}}$, which is the power required to transmit the next bit. *Id.* at 1750. That equation for allocating bits is based, in part, on the parameter $\alpha_{\hat{n}}$, which is not explicitly defined but presumably refers to the magnitude of the channel gain for the *n*th subcarrier (*i.e.*, discarding the phase or time aspect of the complex channel gain). *Id.* at 1748, 1750. Wong describes specific "bit allocation" algorithms for the single user and multiuser contexts (*id.* at 1749-52), and assumes the existence of an "adaptive modulator" that can "adjust[] the transmit power level… according to the combined subcarrier, bit, and power allocation algorithm" (*id.* at 1748), but does not teach an algorithm for adjusting transmit power levels. Although Wong cites several references addressing "equalization" techniques for addressing

intersymbol interference, "a major problem in wideband transmission over multipath fading channels," (*id.* at 1747, 1757), Wong does not suggest that its algorithms perform equalization or address multipath fading channels.

B. Minn (Ex. 1006)

Minn is generally directed to specific techniques in channel estimation performed based on received OFDM signals. Ex. 1006 at 240. Minn teaches incremental improvements over previous approaches that had been based on Discrete Fourier Transform (DFT) computations: a Frequency Pilot Time Average solution and a time-domain "Most Significant Taps" solution. *Id.* at 240-43. Each solution involves the transmitter including pilot tones which can be identified and measured by the receiver. *Id.* at 240. In the MST solution relied on in the Petition, Minn teaches that under certain conditions "the time-domain received samples corresponding to the time-domain pilot samples contain K parts, each representing a scaled channel impulse response for the respective part," and explains how to average the K repeated parts in order to determine the channel impulse response $r[n]$ for each time offset (tap) n. *Id.* at 242-43. Minn teaches to identify the most significant taps by amplitude, and to exclude the other channel taps from the estimation process by setting their gains to zero. *Id.* at 243. Minn then computes the channel frequency response by a conventional application of the Fast Fourier Transform (FFT). *Id.*

Other than general references to transmitting pilot tones or training symbols, Minn does not disclose any transmission methods or teach that its channel estimation techniques are suitable for use at a transmitter. Minn does not teach modifying transmission signals. Although the lead author's identified research interests include "equalization," (*id.* at 248), Minn does not mention pre-equalization or any other form of equalization.

V. THE PETITION FAILS TO SHOW A REASONABLE LIKELIHOOD OF UNPATENTAIBLITY FOR ANY CHALLENGED CLAIM

The Petition fails to show that Wong alone or in combination with Minn discloses or renders obvious claim elements [1.1] and [1.2]. Those elements require determining a "forward path pre-equalization parameter" and modifying a signal based on said "forward path pre-equalization parameter." Because of the Petition's failure to show the pre-equalization terms, it fails to show that claim 1 of the '369 patent is unpatentable. All challenged other claims depend from claim 1. Thus, institution should be denied.

A. Claim 1 Requires Determining a "Forward Path Pre-Equalization Parameter" and Using the Parameter to Perform Pre-Equalization

Claim elements [1.0] and [1.1] recite determining a "forward-path pre-equalization parameter":

Identifier	Claim Language
[1.0]	identifying at least one multipath transmission delay within a reverse path data signal received from a receiving device;
[1.1]	*determining at least one* ***forward path pre-equalization parameter*** based on said at least one transmission delay; and

The plain and ordinary meaning of "pre-equalization parameter" is parameter used to perform pre-equalization. The word "pre-equalization" modifies "parameter." A parameter that is not used for pre-equalization would not be considered a "pre-equalization parameter," but simply a "parameter."

The '369 patent confirms this plain meaning. The patent does not define a "pre-equalization parameter" in terms of the parameter itself (nor purport to provide a list of parameters that are themselves "pre-equalization parameters"). Rather, what makes the determined parameter a pre-equalization parameter is that it is used by the system to perform pre-equalization. *See, e.g.* '369 patent at cl. 1 (reciting modifying a forward path data signal "based on" the forward path pre-equalization parameter); *id.* at 9:48–65 ("FIG. 3 is a functional block diagram wherein [data to be transmitted] is further prepared, ***pre-equalized*** and eventually transmitted. . . . ***Pre-equalization block 304*** is configured to modify one or more of the OFDM modulated sub-carriers *based on* information from a reverse link processing block 308.").

Claim element [1.2] recites modifying a forward path data signal "based on" the determined "forward-path pre-equalization parameter":

Identifier	Claim Language
[1.2]	modifying a forward path data signal that is to be transmitted to the receiving device ***based on said at least one forward path pre-equalization parameter***, where said modifying includes selectively setting different transmission power levels for at least two Orthogonal Frequency Division Multiplexing (OFDM) tones in said forward path data signal.

Thus, claim element [1.2] recites a specific method of performing pre-equalization. It recites modifying a forward path data signal by "selectively setting different transmission power levels for at least two Orthogonal Frequency Division Multiplexing (OFDM) tones in said forward path data signal." Further, the selective setting of different power levels for two OFDM tones is "based on" the determined forward path pre-equalization parameter. Thus, claim [1.2] describes pre-equalizing the forward path signal by selectively setting different power levels for two OFDM tones in the signal based on the determined pre-equalization parameter.

The plain and ordinary meaning of "pre-equalization" in the '369 patent is modifying a signal to reduce unwanted effects associated with multipath fading between the transmitter and the receiver. '369 patent at 7:15–20. This plain meaning is fully supported by and comes directly from the specification. The detailed description of the '369 patent provides a comprehensive overview of traditional

techniques for addressing multipath propagation delays. The overview spans four columns and is organized into sections entitled: "Multipath Propagation Delays," "Traditional Modulation Techniques for Dealing with Multipath Propagation Delays," "Traditional Antenna Techniques for Dealing with Multipath Propagation Delays," and "Conclusion Regarding Such Traditional Techniques." *Id.* at 3:8–7:4.

Following those four columns of discussion, the '369 patent introduces the claimed inventions in a section entitled "Introducing Novel Pre-Equalization Techniques." *Id.* at 7:5–8:14. As this heading makes clear, the '369 patent is directed to improved methods of systems of pre-equalization. According to the patent:

> [I]n accordance with aspects of the present invention equalization techniques are provided for use at a transmitting node and configured to *perform pre-equalization* ***that substantially reduces unwanted effects associated with multipath fading***, including retro-reflected propagation delays. *Such pre-equalization techniques* are discussed in greater detail in later sections.

Id. at 7:14–21. The patent's description of pre-equalization as "reduc[ing] unwanted effects associated with multipath fading" is the plain and ordinary meaning.

The '369 patent reinforces this understanding of pre-equalization throughout the specification. This is evidenced by subsequent sections entitled "An Exemplary Multipath Environment," "Exemplary Base Station and CPE Nodes," "Providing a

Pre-Equalization Capability at an Exemplary Base Station Node," and "Exemplary Frequency Domain Pre-Equalization Techniques." The specification consistently describes pre-equalization as modifying a signal to be transmitted to reduce or correct unwanted effects associated with multipath fading. *See, e.g.*:

- "The exemplary OFDM pre-equalization technique basically acts within the frequency band of OFDM sub-carriers *to pre-equalize the multipath channel* ***to handle multipath delay spread*** *greater than the delay protection provided by conventional OFDM signal processing techniques*, such as, e.g., the OFDM GI. Thus, the receiver can still correct multipath effects that are less than the GI." *Id.* at 7:63–8:3.
- "Thus, pre-equalization block 304 may be configured, in this example, *to invert the measured channel response so that the pre-equalization and the actual subsequently induced channel response errors substantially cancel out*. As a result, transceiver 208 in the receiving CPE device will receive a signal *that is essentially significantly free of* ***troublesome multipath signals*** *that are longer than the GI*." *Id.* at 10:31–37.

B. For Claim Element [1.1], the Petition Fails to Show that the Alleged Parameter It Asserts Is a "*Pre-Equalization* Parameter"

Claim elements [1.0] and [1.1] require determining a "forward-path pre-equalization parameter." The Petition presents various theories for how Wong alone or Wong in combination with Minn allegedly disclose determining the parameter.

See Pet. at 20–35. Patent Owner disagrees with the Petition's theories but need not substantively address them in this preliminary response. This is because overarching flaw with the Petition (under any theory) is that it fails to show that the alleged parameter it asserts is a "pre-equalization parameter."

For claim element [1.1], the Petition asserts that "channel gain magnitude" is the claimed "forward-path pre-equalization parameter." This assertion is the same regardless of whether the Petition relies on Wong or Minn or a combination of both. *See* Pet. at 27 (arguing that Wong's alleged use of time-domain approaches to estimate channel frequency response discloses determining a forward path pre-equalization parameter "*because* it discloses *the 'channel gain' magnitude (**the claimed 'parameter'**)*."); *id.* at 32 (arguing Minn's estimate of channel frequency response discloses a forward path pre-equalization parameter "*because* it discloses *the 'channel gain' magnitude*.").

Thus, under any theory (and regardless of the obviousness or motivation to combine arguments for claim element [1.1]), the alleged parameter the Petition asserts is channel gain magnitude. But the Petition fails to show that channel gain magnitude is a "*pre-equalization* parameter" as required by the claim, instead reading "pre-equalization" out of the claim and assuming that any parameter based on a channel estimate is a "pre-equalization parameter." The Petition fails to provide any sufficient argument, evidence, or explanation on this point.

As discussed above, the plain and ordinary meaning of "pre-equalization parameter" is parameter used to perform pre-equalization. The Petition provides no argument or evidence that channel gain magnitude would itself be considered a pre-equalization parameter. Nor does the Petition present any argument or evidence that channel gain magnitude is used to perform pre-equalization. The Petition does not substantively address the concept or requirement of pre-equalization anywhere in its discussion of claim elements [1.0] and [1.1]. *See id.* at 20–35.

Indeed, the only argument alluded to in the Petition is that channel gain magnitude is a "forward path pre-equalization parameter" because Wong uses it "to modify the forward path signals." *See id.* at 27 (asserting that Wong discloses "the 'channel gain' magnitude (the claimed 'parameter') *that Wong uses to modify the forward path signals*."); Pet. at 32 (asserting that Minn discloses "the 'channel gain' magnitude *that Wong uses to modify the forward path signals*.").

This fails. The mere allegation that a parameter is used to modify a signal is insufficient to show a "*pre-equalization* parameter." At most, the Petition implies that *some* parameter determined and that some parameter is used. But the claim recites "pre-equalization parameter"—not just "parameter." For the Petition's theory to work, it must show that Wong's system uses the alleged parameter (channel gain magnitude) to modify the forward path signal *to perform pre-equalization*. But as discussed for claim element [1.2] below, the Petition fails to show this.

C. For Claim Element [1.2], the Petition Fails to Show that Wong Modifies the Forward Path Signal to Perform Pre-Equalization

Claim element [1.2] recites modifying a forward path data signal by "selectively setting different transmission power levels for at least two Orthogonal Frequency Division Multiplexing (OFDM) tones in said forward path data signal." Further, the selective setting of different power levels for two OFDM tones is "based on" the determined forward path pre-equalization parameter.

As discussed above, the Petition fails to show for claim element [1.1] that the alleged "parameter" (channel gain magnitude) constitutes a "forward path pre-equalization parameter." The only argument the Petition alludes to is that Wong's subsequent use of the parameter makes it a pre-equalization parameter. This depends on Wong's functionality that the Petition points to claim element [1.2]. If Wong does not use channel gain magnitude to perform pre-equalization, then channel gain magnitude would not be a "pre-equalization parameter." The Petition's theory would thus fail for claim element [1.1] (which requires determining a pre-equalization parameter) and claim element [1.2] (which requires modifying a signal based on said pre-equalization parameter).

The Petition's showing for claim element [1.2] is less than a page and a half. *See* Pet. at 35–37. And it provides no sufficient argument, evidence, or explanation that Wong is performing pre-equalization. For example, the Petition fails to provide

argument or evidence that Wong is modifying the forward-path signal to pre-equalize the signal. Nor does it provide any argument or evidence that Wong selectively sets different power levels for two OFDM tones in the forward path data signal to pre-equalize the forward path signal. Again, the Petition fails to substantively address the concept or requirement of pre-equalization anywhere in its discussion of claim element [1.2]. *See id.*

Wong is directed to a power minimization algorithm and there is no evidence it is directed to pre-equalization or that it performs pre-equalization. Wong states that the goal of its algorithm is "to minimize the total transmit power." Wong at Abstract. In particular, Wong "focus[es] on how—and by how much—this new strategy can reduce the required transmit power; or how and by how much this new scheme can improve the bit-error rate (BER) for a fixed transmit power," or "how and by how much this new scheme can increase the area of coverage for a given transmit power and target BER." *Id.* at 1748. Wong contrasts its approach of minimizing total power against "the usual approach [that] is to maximize the capacity (or information rate) under the power constraint." *Id.*

Nor do the specific steps of Wong's total power minimization algorithm suggest that it is a pre-equalization algorithm or show it is performing pre-equalization. For example, Wong allocates bits to each subcarrier using an algorithm that "assigns bits to the subcarriers one bit at a time, and in each assignment, the

subcarrier that requires the least additional power [for the additional bit] is selected," either using an exemplary "greedy algorithm" or using "faster and less complex algorithms which can speed up the bit allocation process significantly." *Id.* at 1750.

Although Wong cites a couple of references addressing "equalization" techniques for addressing intersymbol interference as background (*id.* at 1747), it does not mention those references in the rest of the paper. This context suggests that Wong is not concerned about pre-equalization or purporting to address the same problem. Nor does Wong suggest that its algorithms perform pre-equalization or address the problem of multipath fading channels.

Accordingly, and given the Petition's lack of showing, there is insufficient argument or evidence that Wong is directed to pre-equalization or that its power minimization algorithm is doing pre-equalization. The above discussion applies to any reasonable plain and ordinary meaning interpretation of "pre-equalization parameter" / "pre-equalization." It also applies to the plain a meaning of "pre-equalization" in the '376 patent, which is modifying a signal to reduce unwanted effects associated with multipath fading between the transmitter and the receiver. For the same reasons, there is insufficient argument or evidence that Wong's algorithm is modifying the forward path signal to reduce unwanted effects associated with multipath fading. To the contrary, Wong's algorithm is expressly directed to and seeking to minimize the total transmit power.

D. Petitioner's Expert Declaration Fails to Cure the Petition's Deficiencies for Claim Elements [1.1] and [1.2]

The Petition's broad citations to the declaration of its expert, Dr. Negus, does not cure the deficiencies discussed above. For example, in paragraph 284, Dr. Negus proposed an unsupported interpretation of "forward path pre-equalization," claiming that it is satisfied as long as the signal modified "in some way that accounts for" the properties of the propagation path(s) between the transmitter and the receiver.

This fails for multiple reasons. It is not cited with specificity by the Petition or properly presented or argued in the Petition. The Petition does not propose any claim interpretations or present any arguments based on claim interpretations. Thus, the citations to Dr. Negus amount to an improper incorporation by reference of broad swaths of material that would far surpass the word limit.

Further, Dr. Negus's assertion is unsupported and conclusory and should be disregarded on that basis. The only alleged "support" for his interpretation is a couple of citations to the '369 patent. But as discussed above, those citations (and the entirety of the '369 patent) support the plain and ordinary meaning of "pre-equalization" presented in this POPR. Dr. Negus's interpretation is also deliberately vague and ambiguous, and in no way accounts for the plain meaning of "equalization," in pre-equalization, which implies reducing or correcting unwanted adverse effects associated with multipath fading.

Accordingly, Dr. Negus's opinion should be disregarded and is not a basis for denying institution. *See, e.g.,* Micron Technology, Inc. v. North Star Innovations, Inc., 2021 WL 1750130, *3 (Fed. Cir. 2021) (nonprecedential) (rejecting party's reliance in the IPR on the testimony of its technical expert as to the meaning of the term since the expert only provided conclusory testimony on the issue—"Micron points us to its expert's declaration, which opines that a clock delay circuit is 'a circuit that is designed to delay a clock signal in some manner.' Expert testimony is generally not 'useful to a court' when it contains only 'conclusory, unsupported assertions by [the expert] as to the definition of a claim term.' SkinMedica, Inc. v. Histogen Inc., 727 F.3d 1187, 1195 (Fed. Cir. 2013) (quoting Phillips, 415 F.3d at 1318). Micron does not cite to any other evidence beyond the declaration, and we, like the Board, accord little weight to this testimony.").

E. The Petition's Deficiencies for Claim 1 Apply to All Grounds and All Challenged Claims

As discussed above, Petitioner fails to show that Wong, either alone or in combination with Minn, renders obvious claim 1 of the '369 patent. The same deficiencies apply to all grounds and all challenged claims. For Ground 1, the challenged claims are claims 1–7, 9–10, 12–15, and 41. *See* Pet. at 13. Claim 1 is the only independent claim, and the other challenged claims all depend from claim 1. Likewise, Ground 2 challenges other dependent claims (claims 15, 19, 21, 28, 32–

33, and 35–37) based on Wong and Minn "in further view of Lehne." *Id.* These dependent claims depend from claim 1 as well.

The Petition's theories for the dependent claims rely only on its theories for independent claim 1 to allege that the elements of claim 1 are met and contain no additional theories for claim 1. *See* Pet. 37–47, 54–69. Accordingly, the Petition fails to show that any dependent claim is unpatentable (under any ground) for the same reasons that it fails to show that claim 1 is unpatentable.

VI. CONCLUSION

Because the Petition fails to show a reasonable likelihood of unpatentability for the challenged claims of the '369 patent, institution should be denied.

Date: April 22, 2024

Respectfully submitted,

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CERTIFICATION REGARDING WORD COUNT

Pursuant to 37 C.F.R. §42.24(d), I certify that there are 5,229 words in the paper excluding the portions exempted under 37 C.F.R. §42.24(a)(1).

Date: April 22, 2024

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e)(1), I certify that the above document was served on April 22, 2024 by filing this document through the Patent Trial and Appeal Case Tracking System as well as delivering a copy via electronic mail upon the following attorneys of record for the Petitioner:

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